

NEW CLAIMS

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43. Lighting system for illuminating hollow elements such as signs, inscriptions, letters, and relief letters, comprising:

- a number of printed circuit boards provided with LEDs,
- cables for connecting the printed circuit boards to one another and/or for connecting the printed circuit boards to a voltage source,
- attachment elements for attaching the printed circuit boards to a desired location.

44. Lighting system according to claim 43, comprising at least one transformer for transforming a mains voltage to an operating voltage of the LEDs, wherein the transformer is voltage-stabilized.

45. Lighting system according to claim 43 for illuminating a surface, wherein the LEDs are arranged on, in each case, one flat side of a printed circuit board, wherein the surface of the flat side, fitted with the LEDs, of each printed circuit board is significantly smaller than the surface to be illuminated.

46. Lighting system according to claim 43, wherein the printed circuit boards have different sizes.

47. Lighting system according to claim 43, wherein each printed circuit board has at least two connecting points, each with a positive lead and a negative lead for current, wherein the cables are connected by means of a standardized plug to the connecting

points.

48. Lighting system according to claim 47, wherein the connecting points and the plug are embodied in such a way that a plug which is connected to a connecting point protects the positive and negative leads against moisture.

49. Lighting system according to claim 47, wherein the plug has a latching element which, after the plug has been fitted onto a printed circuit board, latches with a corresponding element provided for that purpose on the printed circuit boards.

50. Lighting system according to claim 47, wherein the transformer is protected against moisture.

51. Lighting system according to claim 43, comprising at least one regulating module for regulating selectively a power supply to at least one of individual ones of the printed circuit boards and individual ones of the LEDs on the printed circuit boards.

52. Lighting system according to claim 43, comprising an attachment element having a flat side and a self-adhesive film provided on the flat side.

53. Lighting system according to claim 43, comprising an attachment element having at least one bearing surface for a printed circuit board and a mounting element which latches to the printed circuit board and presses the printed circuit board against the bearing surface.

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54. Lighting system according to claim 43, comprising a power supply unit with a DEAD-OFF module which terminates the life of the power supply unit if overheating by a predefined limiting value occurs.

55. Lighting system according to claim 43, comprising a power supply unit being vacuum sealed and configured for external use.

56. Lighting system according to claim 43, comprising a solar module comprising a buffer battery and a voltage monitor.

57. Lighting system according to claim 43, comprising a control module configured to automatically switching on or off the lighting system when predefinable peripheral conditions occur, for example times or brightness levels.

58. Lighting system according to claim 43, comprising a regulating module configured to selectively regulate the power supply of individual printed circuit boards and/or individual LEDs on the printed circuit boards.

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59. Printed circuit board having a number of LEDs for a system according to claim 43, wherein the LEDs have an irradiation angle of more than 150°, preferably 175° to 180°.

60. Printed circuit board according to claim 59, wherein the LEDs are mounted on the printed circuit board using the chip-on-board method.

61. Printed circuit board according to claim 59, wherein

each LED is provided with a translucent, lens-like coating.

62. Printed circuit board according to claim 59, wherein each LED has a power between approximately 0.04 and 0.12 Watts.

63. Printed circuit board according to claim 52, comprising at least one protective resistor configured to protect the LEDs.

64. Printed circuit board according to claim 63, wherein several of the LEDs, preferably two to four LEDs, are connected in series with one protective resistor in each case on each printed circuit board.

65. Printed circuit board according to claim 59, wherein all of the LEDs are arranged on one flat side of the printed circuit board, wherein no other components protruding from the flat side are arranged on the flat side on which the LEDs are arranged.

66. Printed circuit board according to claim 65, wherein the flat side on which the LEDs are arranged is constructed so as to reflect light, and is in particular white or mirror-coated.

67. Printed circuit board according to claim 59, wherein the printed circuit board is weather-resistant and has a coating which protects the conductor tracks and the LEDs against moisture.

68. Printed circuit board according to claim 59, wherein all the LEDs provided on the printed circuit board irradiate light of the same color.

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69. Printed circuit board according to claim 59, wherein the LEDs are arranged on the printed circuit board in each case in groups of three located close to one another, a group of three comprised of LEDs with three different colors and being are suitable for additive color mixing.

70. Printed circuit board according to claim 59, wherein at least three LEDs are arranged in a straight line on the printed circuit board, the distance between two adjacent LEDs being approximately 14 to 20 mm.

71. Printed circuit board according to claim 70, wherein the printed circuit board is approximately 50 to 60 mm long, approximately 8 to 16 mm wide and approximately 1 to 3 mm thick.

72. Printed circuit board according to claim 70, wherein six LEDs are arranged in a straight line and the printed circuit board is approximately 90 to 120 mm long, approximately 8 to 16 mm wide and approximately 1 to 3 mm thick.

73. Printed circuit board according to claim 59, wherein that nine LEDs are arranged offset from one another in a zigzag shape on two straight lines on the printed circuit board, the distance between the two lines being approximately 25 to 35 mm and the distance between two adjacent LEDs arranged on a line being approximately 30 to 40 mm.

74. Printed circuit board according to claim 73, wherein the printed circuit board is approximately 140 to 160 mm long, approximately 32 to 42 mm wide and approximately 1 to 3 mm thick.

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75. Printed circuit board according to claim 59, having an opening configured to receive an attachment element for attaching the printed circuit board.

76. Printed circuit board according to claim 59, comprising at least two connecting points, each with a positive lead and a negative lead for current, wherein each one of the connecting points is configured to be connected to standardized plugs.

77. Printed circuit board according to claim 76, comprising a guide groove arranged in the vicinity of each connecting point and configured to guide one of the plugs.

78. Printed circuit board according to claim 76, comprising a corresponding element, which is at least partially complementary to a latching element of a plug, provided in the vicinity of each connecting point.

79. Printed circuit board according to claim 78, wherein the corresponding element is a mounting opening.

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80. Illumination method comprising the steps of:
providing a number of printed circuit boards provided with LEDs;
connecting the printed circuit boards to one another and/or to a voltage source by cables;
attaching the printed circuit boards to a desired location by attachment elements.
